ARITHMETIC.

Conducted by B.F.FINKEL, Kidder, Missouri. All contributions to this department should be sent to him.

SOLUTIONS OF PROBLEMS.

44. Proposed by F. P. MATZ, M. Sc., Ph. D., Professor of Mathematics and Astronomy in New Windsor College, New Windsor, Maryland.

A, B, and C together bought a ship. A paid for the a/bth, $=\frac{2}{5}$th, part of the ship. B paid for the m/nth, $=\frac{3}{8}$th, part of the ship. C paid $M, =\$2000$. How many dollars did A, and B, pay?

I. Solution by E. R. ROBBINS, Master of Mathematics in Lawrenceville Schools, Lawrenceville, N. J., COOPER D. SCHMITT, Professor of Mathematics, University of Tennessee, Knoxville, Tennessee, and the PROPOSER.

Since C paid for the $[1-(a/b+m/n)]$th *part* of the ship, the *amount* A paid must be

$$A=\left(\frac{an}{b(n-m)-an}\right)\text{of }\$M,=\left(\frac{1}{b/a(1-m/n)-1}\right)\text{ of }\$M,\ =\$2500;$$

and, consequently, the amount B paid must be

$$B=\left(\frac{bm}{b(n-m)-an}\right)\text{of }\$M,=\left(\frac{1}{n/m(1-a/b)-1}\right)\text{ of }\$M,=\$6750.$$

NOTE.—The generalized expression for the cost of the ship becomes

$$S=\left(\frac{bm}{b(n-m)-an}\right)\text{of }\$M,=\left(\frac{1}{(1-m/n)-a/b}\right)\text{ of }\$M,=\$11250.$$

II. Solution by G. B. M. ZERR, A. M., Principal of High School, Staunton, Virginia, and W. I. TAYLOR, Instructor in Mathematics, Berea, Ohio.

$\frac{2}{5}+\frac{3}{8}=\frac{10+7}{40}=\frac{17}{40}$; $\frac{40}{40}-\frac{17}{40}=\frac{23}{40}$, C's share. $\frac{8}{40}=\$2000$, $\frac{1}{40}=\frac{1}{8}$ of $\$200=\$250$.

$\frac{10}{40}=10\times\$250=\$2500$, what A, pays. $\frac{27}{40}=27\times\$250=\$6750$, what B, pays.

III. Solution by J. F. W. SCHEFFER, A. M., Hagerstown, Maryland.

C pays for the $1-\left(\frac{a}{b}+\frac{m}{n}\right)$ part of the ship; hence, the price of the ship is $M\div\left[1-\left(\frac{a}{b}+\frac{m}{n}\right)\right]$. A's share $=\frac{a}{b}\cdot\frac{M}{1-(a/b+m/n)}=\$2500$.

$$B\text{'s }=\frac{m}{n}\cdot\frac{M}{1-(a/b+m/n)}=\$6750.$$

Also solved by *P. S. Berg.*